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KOTEEN & NAFTALIN, L.L.P.

1150 CONNECTICUT AVENUE  
WASHINGTON, D.C. 20036

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TELEPHONE  
(202) 467-5700  
TELECOPY  
(202) 467-5915

BERNARD KOTEEN\*  
ALAN Y. NAFTALIN  
ARTHUR B. GOODKIND  
GEORGE Y. WHEELER  
MARGOT SMILEY HUMPHREY  
PETER M. CONNOLLY  
CHARLES R. NAFTALIN  
GREGORY C. STAPLE  
R. EDWARD PRICE  
\* SENIOR COUNSEL

November 5, 1997

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D.C. 20554

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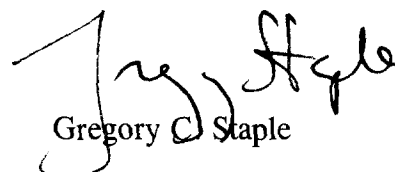
Re: Ex Parte Presentation  
IB Docket No. 96-111

Dear Mr. Caton:

On behalf of TMI Communications and Company, Limited Partnership (TMI), and pursuant to Section 1.1206(a)(2) of the Commission's Rules, this letter shall inform the Commission that today John Forsey, of TMI, and Robert Power, a consultant to TMI, and myself and Edward Price, of this office, met with James Ball, Linda Haller, Fern Jarmulnek, Harold Ng, and Cassandra Thomas of the International Bureau and David Siddall of Commissioner Ness's office. The purpose of this meeting was to discuss TMI's positions, which are a matter of record, on issues in the above-referenced docket. Attendees at the meeting were provided with copies of the enclosed background materials concerning TMI's operations and with copies of previous TMI submissions in the above-referenced docket, which are also a matter of record.

In the event there are questions concerning this matter, please contact me.

Very truly yours,

  
Gregory C. Staple

Enclosure

cc (w/o encl): James L. Ball  
Linda L. Haller  
Fern J. Jarmulnek  
Harold Ng  
David R. Siddall  
Cassandra C. Thomas

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 **TMI** Communications

Mobile **Satellite** Communications



# MSAT<sup>®</sup> Service Providers

The MSAT<sup>®</sup> Mobile Satellite Services provided by TMI Communications' MSAT Network are available from our Service Providers who supply equipment, service and post-sales support.

## **Glentel Inc.**

8501 Commerce Court  
Burnaby, B.C.  
V5A 4N3  
1 800 472-8835  
Media Inquiries:  
1 800 431-2320

## **Mobility Canada**

20 Carlson Court, Suite 100  
Etobicoke, Ontario  
M9W 6V4  
1 800 927-0125  
Media Inquiries:  
(416) 213-3308

## **Infosat Telecommunications**

#101-16 Fawcett Rd.  
Coquitlam, B.C.  
V3K 6X9  
1 800 871-3011  
Media Inquiries:  
(604) 524-3038

## **Government Telecommunications and Informatics Services (GTIS)**

365 Laurier Avenue West  
21st Floor  
Journal Tower South  
Ottawa, Ontario  
K1A 0C8  
Tel: (888) 211-1110

Please call TMI Communications at 1 800 216-6728 for more information.  
Media Inquiries: 1 800 558-4702

September 1996



## **TMI Communications**

**TMI Communications and Company, Limited Partnership**  
Montreal, Ottawa, Calgary, Vancouver  
Head Office  
1601 Telesat Court P.O. Box 9826 Ottawa, Ontario K1G 5M2  
Tel: 1 800 216-MSAT or 613-742-4101  
Fax: 613-742-4130

MSAT and MSAT Communicator are registered trademarks of TMI Communications and Company, Limited Partnership.



# **MSAT**





# MSAT<sup>®</sup> Services

## - Go Anywhere, Stay In Touch

TMI Communications began offering mobile satellite communications services on the MSAT<sup>®</sup> (satellite communications) Network to Canadians in January 1996.

MSAT Services pick up where traditional land-based telephone, cellular, microwave, and radio services leave off. High costs prohibit the extension of telephone or radio coverage everywhere in Canada. Many remote areas do not have access to communications services that the majority of Canadians take for granted.

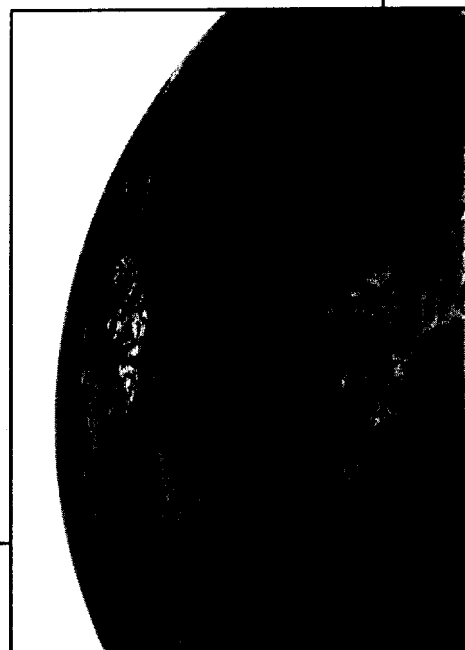
The MSAT Network provides two-way communications capability from anywhere in North America,

and for any type of moving vehicle whether on land, at sea, or in the air. Services include voice, data, facsimile, paging, and dispatch radio.

TMI Communications, as owner and operator of the MSAT Network, offers these services through leading wireless communications distributors including: Glentel Mobile Satellite, Mobility Canada Satellite, Infosat Telecommunications and the Government Telecommunications and Informatics Services (GTIS). MSAT Services enable these operators to **extend their areas of coverage** at very reasonable prices to subscribers.

The basic equipment needed to use these services includes a compact antenna, a transceiver, and a handset. The equipment costs between \$5,000 and \$6,000 depending on optional features selected and the manufacturer. Leasing programs are also available. MSAT Communicators<sup>®</sup>, have been developed by three leading manufacturers: Westinghouse Electric Corporation, Mitsubishi Electric Corporation and

(over)



Narrowband Telecommunications Research Inc.

Calls on the MSAT Network cost between \$1.40 and \$2.75 per minute, considerably cheaper than the \$7 or more per minute now charged for other satellite services.

**Calls on the MSAT Network are easy to make.** Customers plug telephone handsets, data terminals, or facsimile machines and other devices into jacks or ports on the MSAT Communicator. Voice calls are made in the same way that we make traditional telephone and cellular calls. Subscribers send and receive data messages and files the way we currently use land based-modems and public telephone networks to interconnect personal comput-

ers, access electronic mail systems, and more.

Any remote community, scientific exploration team, resource operation, or temporary site now has access to the rest of the world with **low-cost mobile satellite communications.**

Virtually any car, truck, boat, or plane travelling within or beyond cellular or radio range can now use MSAT Services — at the flip of a switch. Remote monitoring devices on pipelines, unmanned oil wells and other sensitive equipment will transmit data via the MSAT Network to home offices, providing immediate warning of spills, leaks and other malfunctions.

The MSAT Satellite is **unique.** Its huge capacity — 1,800 channels compared to about 50 on con-

ventional commercial satellites — means immediate availability for all users.

And, it is not limited by the curvature of the earth, as are low-earth orbiting satellites or radio and cellular towers. The MSAT Satellite will be in a geostationary orbit at 36,000 kilometres above the earth — about one-fourth of the way to the moon. One satellite transforms all of North America, Central America and most of the Caribbean into a single communications cell.

March 1996

MSAT and MSAT Communicator are trade-marks of TMI Communications. Capabilities and specifications noted are subject to change and improvement as the TMI Network is enhanced. Service availability in areas outside Canada may be conditional upon regulatory approval.



**TMI Communications**

TMI Communications and Company, Limited Partnership  
Montreal, Ottawa, Calgary, Vancouver

Head Office

1601 Telesat Court P.O. Box 9826 Ottawa, Ontario K1G 5M2

Tel: 1 800 216-MSAT or 613-742-0000, extension 4306



# MSAT®

## - Key Applications

The MSAT® (satellite communications) Network provides Canadians with a wide range of satellite-based wireless communication services that dramatically improve our ability to communicate, no matter where we are in North America.

With MSAT Services, no car, truck, plane or boat will ever be out of touch.

**Sales and field personnel** can use the MSAT Network to stay in touch with customers and their home base. They can use MSAT Services to access public and private computer networks, and to send and receive faxes.

The MSAT Network's ability to offer services to those **remote areas** currently

without access to modern telecommunications services is unparalleled. For example, the MSAT Network offers an **economical alternative** for telephone service to residential customers currently beyond the limit of traditional telephone or wireless services.

Underserved public telephone customers – for example, those served only by party lines – can use the MSAT Network to upgrade to single-line service.

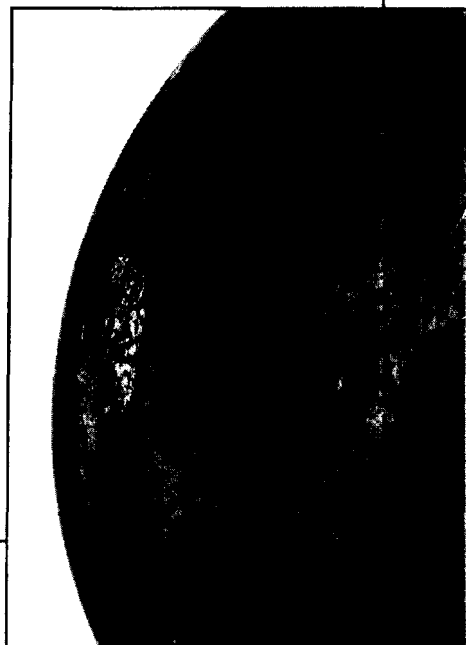
The MSAT Network provides **seasonal telephone service** to cottages, remote fishing and hunting camps, and wilderness vacation sites. The terminal may be easily removed when the

location is no longer in use.

At **scientific exploration** base camps and isolated **resource-based operations** where it is impossible or uneconomical to provide telephone or radio services, the MSAT Network offers a variety of private voice, data and other services.

MSAT Services provide instant communication links or additional capacity during **emergencies** – such as air crashes, forest fires, oil spills and train derailments – in rural or remote areas.

(over)



When telephone wires are out during snow, ice and wind storms, floods, earthquakes and other **natural disasters**, the MSAT Network provides **emergency telephone service** until conventional services are restored.

Companies and organizations equipping their **fleets** with MSATCommunicators<sup>®</sup> and a global positioning system will be able to pinpoint the exact location of their vehicles, monitor and track shipments, and communicate with vehicle operators and other mobile personnel.

The MSAT Network also helps companies and organizations to **protect the environment**. Data and monitoring devices placed on unmanned oil wells, along pipelines, and on other

sensitive equipment will transmit data and signals via the MSAT Network to distant monitoring stations, providing **instant warning** of spills, leaks, and other malfunctions.

The MSAT Network began commercial operation in January 1996 with voice services. New services and features will continue to be introduced - paging, dispatch radio, packet data and facsimile and voice messaging. TMI Communications is actively encouraging telephone and cellular resellers and other communications companies to develop specialized, value-added MSAT Services.

March 1996

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Montreal, Ottawa, Calgary, Vancouver

Head Office

1601 Telesat Court, P.O. Box 9826, Ottawa, Ontario K1G 5M2

Tel: 1-800-216-MSAT or 513-742-0000 extension 4316

Fax: 513-742-0000

# **MSAT FACSIMILE**

The MSAT satellite facsimile system is a fast, error free fax handling system. The system offers a fax mailbox feature which stores and forwards messages for subscribers who are unavailable to receive a fax when it arrives over the MSAT Network. The system uses the latest data compression and error checking techniques.

In addition to fax mailboxes, we provide users with optional tools to efficiently handle fax traffic, such as delivery reports and distribution lists for fax broadcasting. Subscribers can exchange fax messages with other mobile subscribers and with users of the Public Switched Telephone Network (PSTN).

There are two types of fax interface systems to choose from:

## **1. Hardware Fax Interface Unit (HFIU)**

An easy to use interface unit between a fax machine and a satellite communicator. It attaches to your fax machine with a standard telephone cable and to your satellite communicator with a standard 25 pin serial modem cable. The HFIU receives, interprets and processes the codes and fax data, sends them to the satellite communicator where they are transmitted to the satellite and relayed to our switch. The switch decodes the message, converts it back to fax format, and delivers it to the specified fax number. If the fax cannot be delivered initially or after a pre-determined number of retries, the switch stores it in an appropriate mailbox for subsequent delivery or retrieval.

The switch also receives faxes from the public switched telephone network (PSTN), processes them and delivers them to the satellite earth station for onward transmission to subscribers.

## **2. Software Fax Interface Unit (SFIU)**

An MS-Windows program that enables a satellite subscriber to send and receive G3 faxes via the switch using an IBM compatible PC equipped with MS-Windows 3.1 / 3.11 / 95 Class 1 COTS (commercial, off the shelf) fax application. The PC is connected to the satellite subscriber's communicator via the PC COM port using a standard RS-232 serial interface cable.

The COTS MS-Windows based fax applications supported are: Quicklink, BitFax, WinFax Lite, and WinFax Pro.

# **MSAT Dispatch Radio**

The MSAT Network supports two-way voice dispatch and one-way voice broadcast capabilities anywhere within the MSAT Network coverage area. The two-way capability provides group communications in which one user can talk to many, as well as Private Mode communications for one-to-one confidential conversations. The one-way broadcast capability enables one user to broadcast to many users simultaneously.

MSAT Dispatch Radio is highly flexible, and can be combined with Phone or Mobile Phone service on the same MSAT Communicator. It is ideal for use in dispatching, and for groups working in remote areas that require secure, dependable group communications.

MSAT Dispatch Radio is an alternative to organizations contemplating building and maintaining a private trunked network or to extending the coverage of their existing systems to rural or remote areas. Organizations can implement the service almost immediately, minimizing their up-front capital requirements.

## **The Hardware**

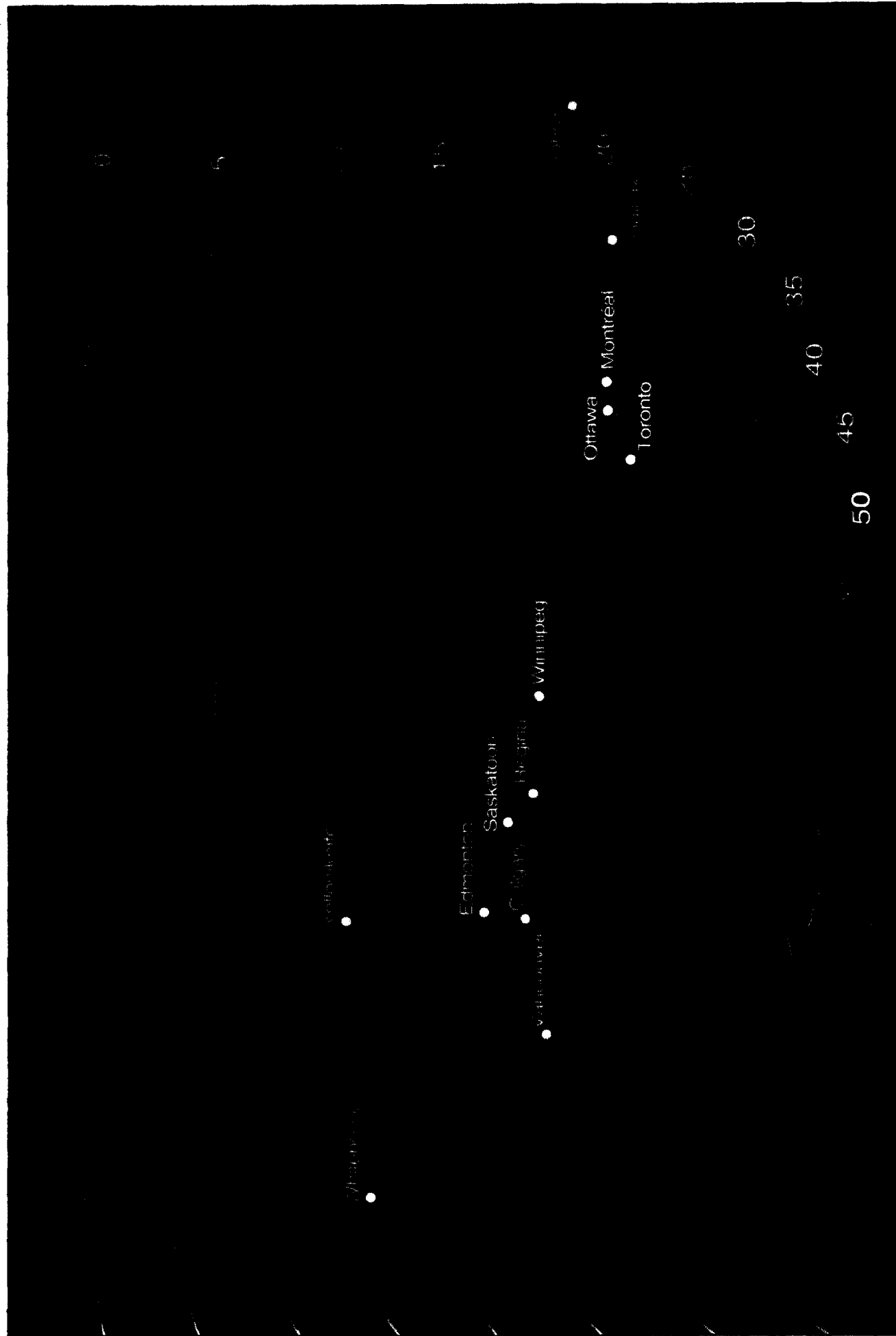
MSAT Dispatch Radio uses standard MSAT Communicators, which can also be used for phone, fax and asynchronous data services. MSAT Communicators are manufactured by Westinghouse Electric Corporation and Mitsubishi Electric Corporation. Westinghouse has integrated dispatch functionality into their standard handset, while Mitsubishi has a dedicated push-to-talk mike.

Each MSAT Communicator can have access to a maximum of 15 Talk Groups. Each Talk Group is assigned a unique 2 digit Tag Number and it is used to select the Appropriate Talk Group for any Conference which the subscriber wishes to initiate or participate in. Each subscriber can readily select the Talk Group to which they want to tune.

## **PSTN Interconnection**

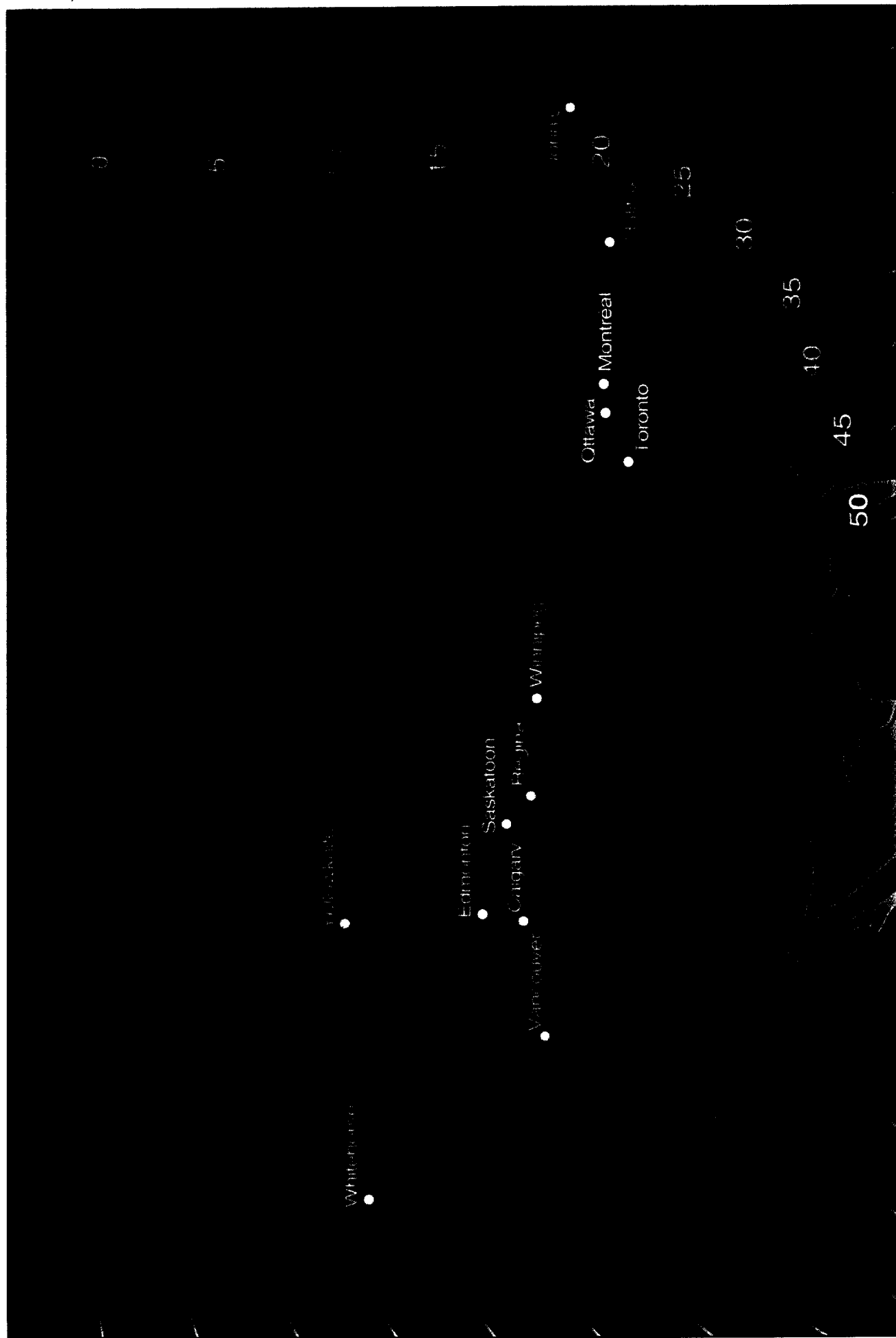
Two optional features for Talk Groups allow interconnection with the Public Switched Telephone Network:

1. Dial In Feature - allows someone with access to the PSTN to dial the satellite phone number and with a special PIN reach the subscribers using the Talk Group.
2. Dial Out Feature - allows a Talk Group participant to dial out to a pre-assigned telephone number to bring a PSTN user into the dispatch conversation.



Elevation Angles to **MSAT** Satellite (106.5° West)



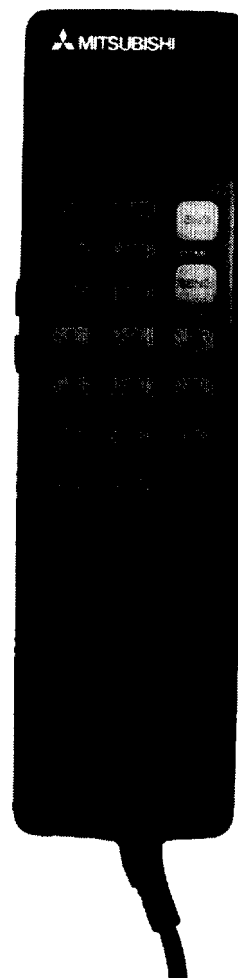
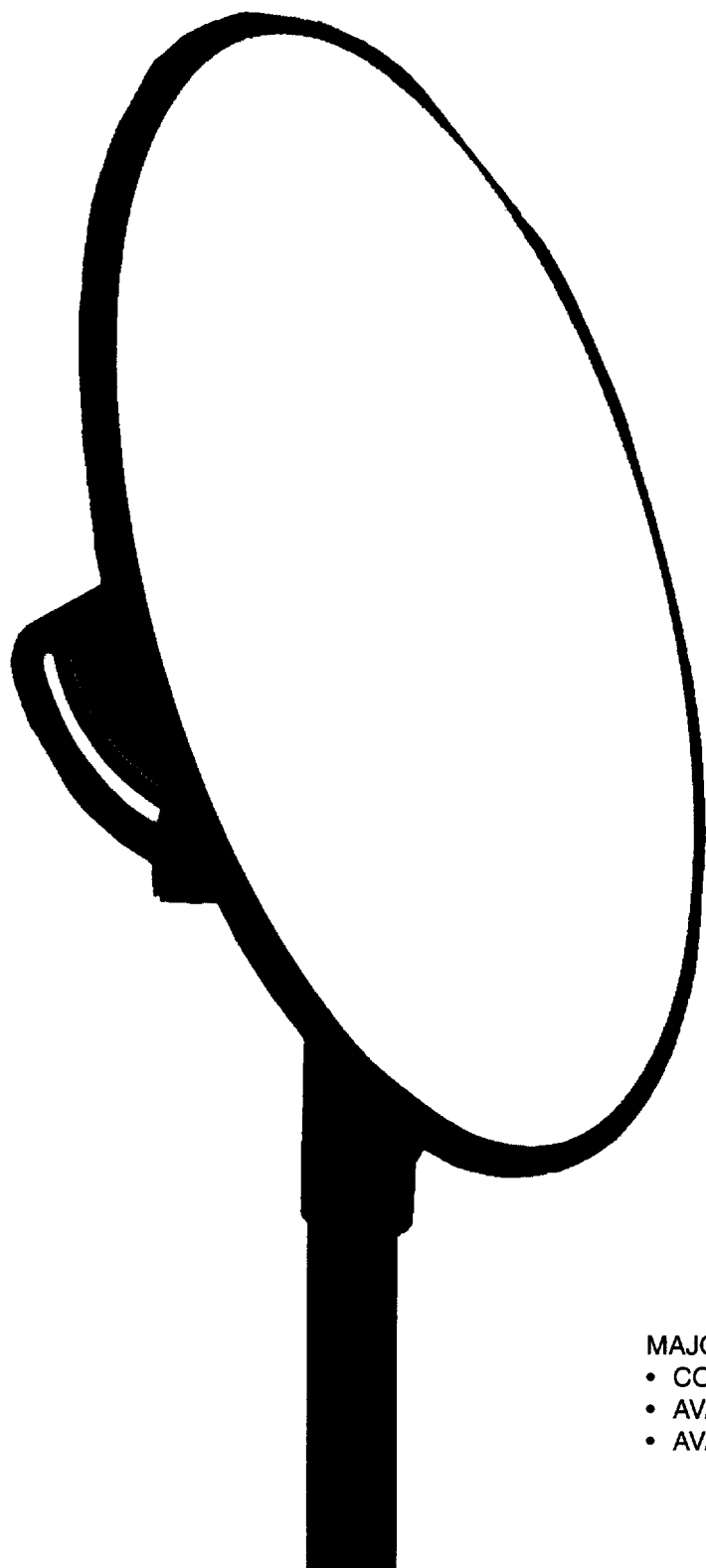


Angles d'élévation au satellite **MSAT** (106,5° de longitude ouest)

# **MSAT Communicator**

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FIXED SITE TERMINAL  
FOR MSAT SYSTEM



#### MAJOR FEATURES

- COVERAGE THROUGHOUT THE NORTH AMERICAN CONTINENT
- AVAILABLE DATA (CS) CAPABILITY
- AVAILABLE FAX TRANSMISSION CAPABILITY

**Communication Modes**

Voice	Full duplex digital voice
Fax	See MSAT Service Provider
Data	1200 bps / 2400 bps / 4800 bps

**System Specifications**

Transmit Frequencies	1626.5 - 1660.5 MHz
Receive Frequencies	1525.0 - 1559.0 MHz
G/T	-10 dB/°K from 5° - 90° elevation
Optimum Performance	
EIRP	12.5 - 16.5 dBW
Polarization	Right-handed Circular (RHCP)
Channel Spacing	6 kHz

**Interface Specifications**

Voice	Handset
Fax	See MSAT Service Provider
Data	DB-25, RS-232C, AT Command Set (without escape sequence)
Power	Terminal Block (+12V, Gnd) AC Plug

**Physical Specifications**

<b>Antenna Unit (AU)</b>	
Diameter	21.0" (535 mm)
Height	0.6" (14 mm)
Weight	13.2 lb. (6kg) Approximate
<b>Transceiver Unit (TU)</b>	
W x H x D	8.1" x 2" x 12.1" (206 mm x 51 mm x 305 mm)
Weight	8 lbs (3.6 kgs)
<b>Handset (HS)</b>	
L x W x D	8.0" x 2.2" x 5.1" (204 mm x 57 mm x 35 mm)
Weight	0.7 lbs (0.3 kg)
<b>AU-TU Cable</b>	
Type	Compound Cable
	0.35" x 0.16" (9.1 mm x 4.1 mm)
Length	20 ft (6 m)

**Environmental Specifications**

Parameter	Antenna Unit	Transceiver Unit
<b>Temperature</b>		
Operating	-30°C to +43°C	-30°C to +55°C
Power-on	-45°C to +49°C	-40°C to +85°C
Storage	-55°C to +85°C	-55°C to +85°C
<b>Relative Humidity</b> (non-condensing)		
	98% at +38°C	98% at +38°C
<b>Icing (Survival)</b>		
	1" (25 mm)	N/A
<b>Wind</b>		
Operating	124 mph (200 km/h)	N/A
Rain	2" /hr (50 mm/hr)	N/A
Solar Radiation	1120 W/m <sup>2</sup>	N/A
Shock (Survival)	1/2sin, 20g, 11ms	1/2sin, 20g, 11ms
<b>Vibration (random)</b>		
Operating	1.05g rms	1.05g rms
Storage	1.7g rms	1.7g rms
(Note: 5-20 Hz: 0.05g <sup>2</sup> /Hz, 20-150 Hz: -3dB/octave)		

**Power Specifications**

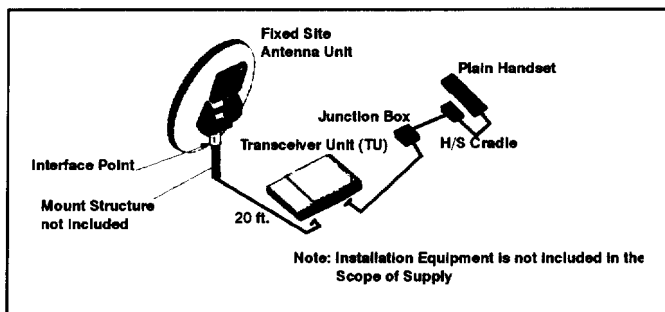
Primary Voltage	110VAC ± 10%, single-phase, 60Hz ± 6%
<b>Power Consumption</b>	
Receive	<15W
Transmit	<30W

**System Components**

Standard  
 MSAT Fixed Site Antenna Unit (FS-AU)  
 with 20ft. (6 m) antenna cable (AU-TU)  
 MSAT Transceiver Unit (TU)

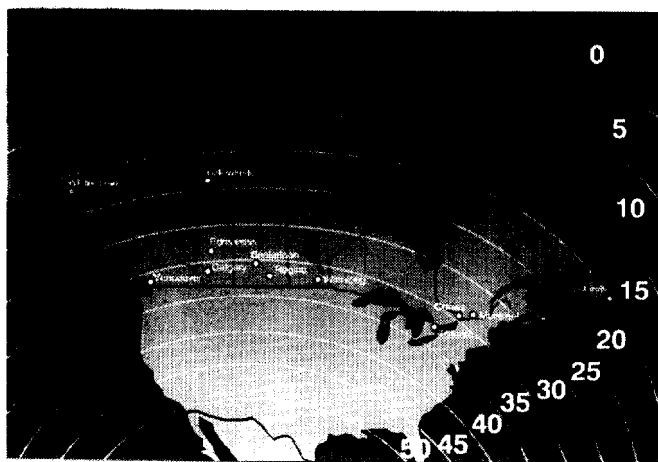
**Options**

Handset (HS) with Cradle Unit (CU)  
 Fax - See MSAT Service Provider  
 Telephone Interface Adapter  
 Protective enclosures  
 Antenna Support Structure  
 Battery Back up  
 PTT/MIC and External Speaker



This device is designed for use with the TMI Communications and Company, Limited Partnership (TMI) Mobile Satellite (MSAT) system. TMI's MSAT system is scheduled to provide voice, fax and data services. These services must be obtained separately.

*The contents in this publication are subject to change without notice. 10/95*


**MITSUBISHI ELECTRIC**

4299 14th Avenue  
 Markham, Ontario L3R 0J2  
 Tel: (905) 475-7728, Fax: (905) 475-7958



## MSAT Communicators

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TRANSPORTABLE TERMINALS  
FOR MSAT SYSTEM



### MAJOR FEATURES

- UNINTERRUPTED VOICE SERVICE THROUGHOUT NORTH AMERICA
- COMPACT (14" X 15") AND WEIGHS APPROXIMATELY 27 LBS.
- DETACHABLE HIGH-GAIN ANTENNA
- DATA (CS) TRANSMISSION CAPABILITY
- AVAILABLE FAX TRANSMISSION CAPABILITY



## MSAT High Gain Transportable Mobile Terminals

### Communication Modes

Voice	Full Duplex Digital Voice Half Duplex Digital Voice (Option)
Fax	See MSAT Service Provider
Data	2400 bps/4800 bps

### System Specifications

Transmit Frequencies	1626.5 - 1660.5 MHz
Receive Frequencies	1525.0 - 1559.0 MHz
G/T	-10 dB/°k from 5° - 60° elevation Optimum Performance
EIRP	12.5 - 16.5 dBW
Polarization	Right-handed Circular (RHCP)
Channel Spacing	6 kHz

### Interface Specifications

Voice	Handset PTT / MIC with speaker (Option)
Fax	See MSAT Service Provider
Data	DB-25, RS-232C, AT Command Set (without escape sequence)
Power	Internal: Battery (Removable, rechargeable) External: Cigarette Lighter Adapter (Option) AC/DC Converter (Option)

### Physical Specifications

#### Mobile Terminal (MT)

W x H x D	15.0" x 4.7" x 14.0" (380 mm x 120 mm x 355 mm)
Weight	27.5 lbs (12.5 kg) with Battery

#### Antenna Unit (AU)

W x H x D	15.0" x 2.0" x 14.0" (380 mm x 50 mm x 355 mm)
Weight	6.6 lbs (3 kg)

#### Transceiver Unit (TU)

W x H x D	25.0" x 2.7" x 14.0" (380 mm x 70 mm x 355 mm)
Weight	20.2 lbs (9.2 kg)

#### Handset (HS)

L x W x D	8.0" x 2.2" x 1.3" (204 mm x 56 mm x 33 mm)
Weight	0.7 lbs (0.3 kg)

#### AU-TU Cable

Type	Compound Cable 0.35" x 0.16" (9.1 mm x 4.1 mm)
Length	1 ft (300 mm) (Standard), 20 ft (6 m) (Option)

### Environmental Specifications

Parameter	Antenna Unit	Transceiver Unit
Temperature		
Operating	-30°C to +43°C	-30°C to +55°C
Power-on	-45°C to +49°C	-45°C to +49°C
Storage	-55°C to +85°C	-55°C to +85°C
Relative Humidity (non-condensing)	98% at +38°C	98% at +38°C
Rain	2" /hr (50 mm/hr)	N/A
Solar Radiation	1120 W/m <sup>2</sup>	1120 W/m <sup>2</sup>
Shock (Survival)	1/2sin, 20g, 11ms	1/2sin, 20g, 11ms
Vibration		
Operating	1.05g rms	1.05g rms
Storage	1.7g rms	1.7g rms
(Note: 5-20 Hz: 0.05g <sup>2</sup> /Hz, 20-150 Hz: -3dB/octave)		

### Power Specifications

Voltage	Internal: +12VDC External: +11VDC to +16VDC
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### Power Consumption

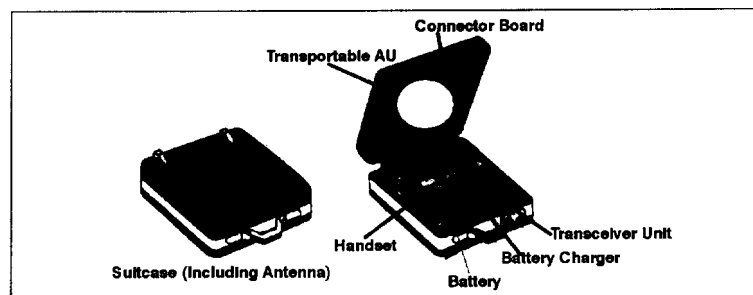
Receive	<15W
Transmit	<30W

### System Components

Standard  
Handset (HS)  
MSAT Transportable High Gain Antenna Unit (HG-AU)  
MSAT Transceiver Unit (TU)  
Internal Battery 12AH  
Internal Battery Charger  
Compass

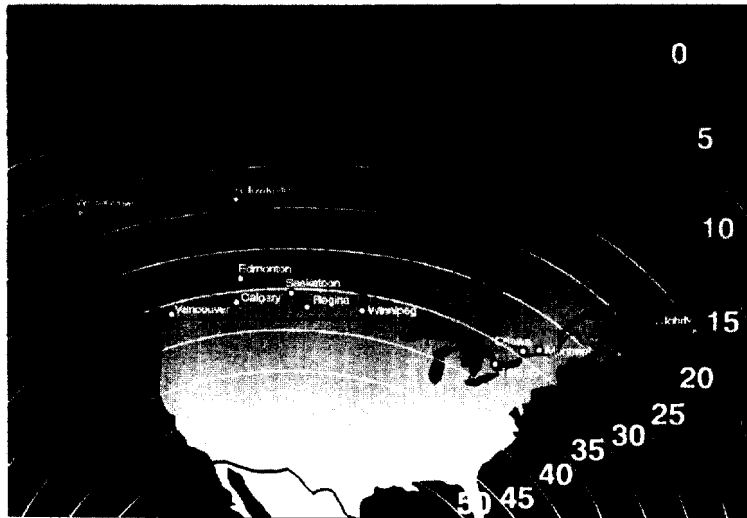
### Options

PTT/MIC and Speaker  
Fax - See MSAT Service Provider  
Antenna Extension Cable, 20 ft. (6 m) (AU-TU)  
External AC/DC Converter  
Spare Internal Battery  
Cigarette Lighter Adapter



This device is designed for use with the TMI Communications and Company, Limited Partnership (TMI) Mobile Satellite (MSAT) system. TMI's MSAT system is scheduled to provide voice, fax and data services. These services must be obtained separately.

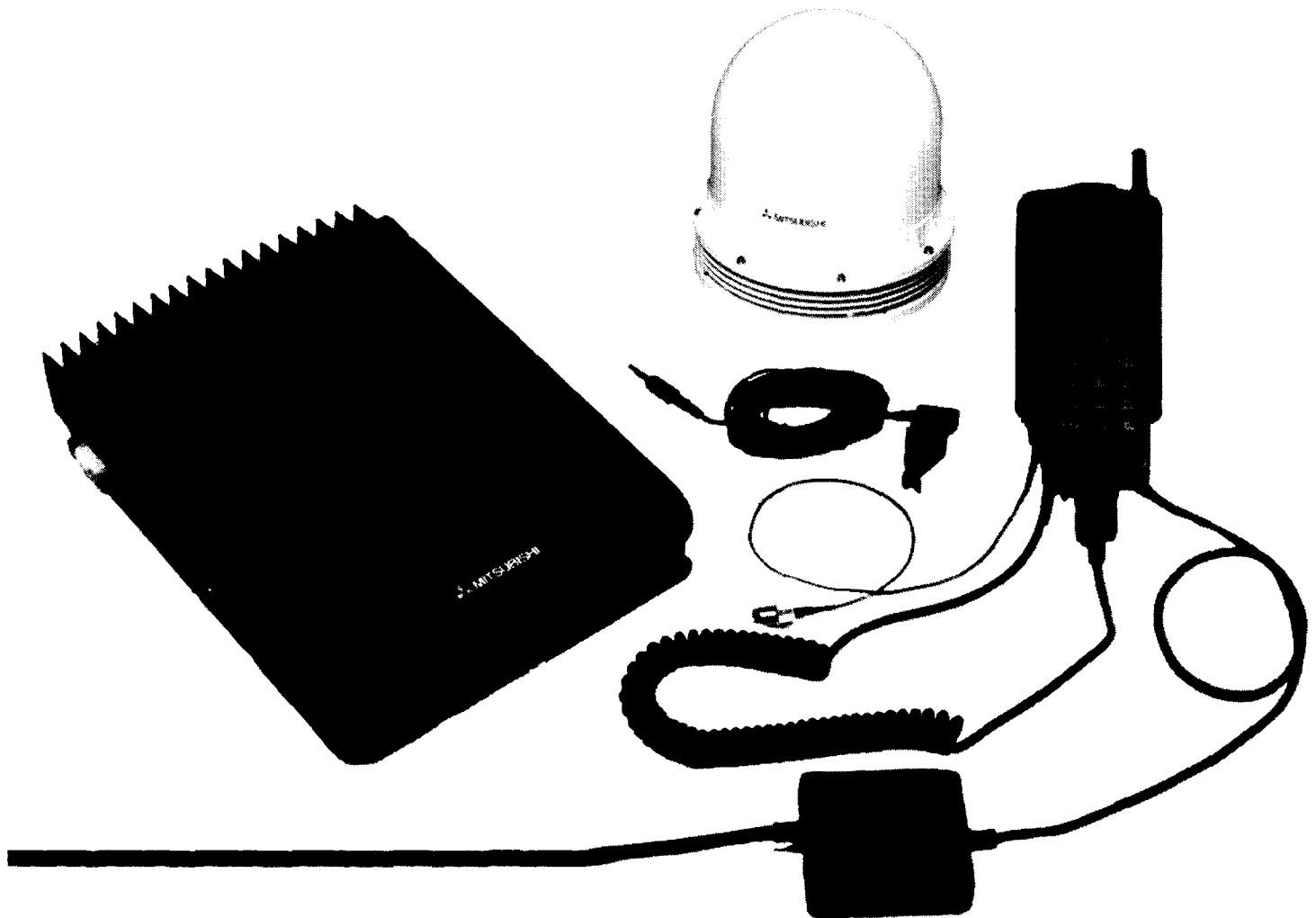
*The contents in this publication are subject to change without notice. 04/96*



# **MITSUBISHI** **MSAT Communicators**

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LAND MOBILE TERMINAL  
FOR MSAT SYSTEM



#### MAJOR FEATURES

- COVERAGE THROUGHOUT THE NORTH AMERICAN CONTINENT
- MSAT / CELLULAR DUAL MODE COMMUNICATION
- HANDHELD PORTABLE CELLULAR RADIO
- MULTIPLE ANTENNA CONFIGURATION CHOICES
- AVAILABLE DATA (CS) CAPABILITY
- AVAILABLE FAX TRANSMISSION CAPABILITY

# **MITSUBISHI** **MSAT Land Mobile Medium Gain Mobile Terminal**

**PRELIMINARY**

## Communications Modes

Voice	Full duplex digital voice Analog cellular voice (Option)
Fax	See MSAT Service Provider
Data	1200 bps / 2400 bps / 4800 bps

## System Specifications

Transmit Frequencies	1626.5 - 1660.5 MHz
Receive Frequencies	1525.0 - 1559.0 MHz
G/T	-16 dB/°k from 15° - 60° elevation (Dome AU) -17.6 dB/°k from 25° - 60° elevation (Mast AU)
Optimum Performance	
EIRP	12.5 - 16.5 dBW (Dome) 11.6 dBW (Mast)
Polarization	Right-handed Circular (RHCP)
Channel Spacing	6 kHz

## Interface Specifications

Voice	Handset Dual-Mode/Cellular Handheld (Option) PTT/MIC with Speaker (Option)
Fax	See MSAT Service Provider
Data	DB-25, RS-232C, AT Command Set (without escape sequence)
Power	Terminal Block (+12V, Gnd, Ignition)

## Physical Specifications

Antenna Unit (AU)	Dome	Mast Antenna	Mast RF Unit
Diameter	6.8" (173 mm)	0.85" (21mm)	6.8" (173 mm)
Height	6.6" (137 mm)	39.7" (1008 mm)	3.3" (84 mm)
Weight	3.0 lbs (1.4 kg)	2.3 lbs. (1.0 kg)	3.7 lbs (1.7 kg)

## Transceiver Unit (TU)

W x H x D	8.1" x 2" x 12.1" (206 mm x 51 mm x 305 mm)
Weight	8 lbs. (3.6 kg)

## Handset (HS)

L x W x D	8.0" x 2.2" x 1.3" (204 mm x 56 mm x 33 mm)
Weight	0.7 lbs (0.3 kg)

## Beam Steering Unit (BSU)

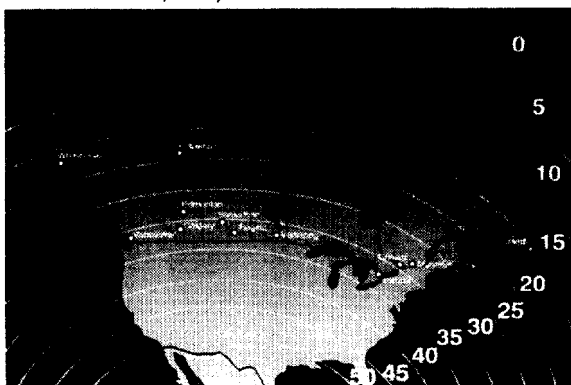
W x H x D	0.8" x 2" x 2" (21 mm x 51 mm x 51 mm)
Weight	0.4 lbs. (0.2 kg)

## AU-TU Cable

Type	Compound Cable 0.35" x 0.16" (9.1 mm x 4.1 mm)
Length	20 ft (6 m) for Dome AU 6.7 ft (2 m) for Mast AU

## Dynamic Specifications

Turning rate	60°/sec, maximum
Turning acceleration	20°/sec <sup>2</sup> , maximum



## Environmental Specifications

Parameter	Antenna Unit	Transceiver Unit
Temperature		
Operating	-30°C to +43°C	-30°C to +55°C
Power-on	-45°C to +49°C	-40°C to +85°C
Storage	-55°C to +85°C	-55°C to +85°C
Relative Humidity (non-condensing)	98% at +38°C	98% at +38°C
Icing (Survival)	1" (25 mm)	N/A
Wind		
Operating	124 mph (200 km/hr)	N/A
Rain	2" /hr (50 mm/hr)	N/A
Solar Radiation	1120 W/m <sup>2</sup>	N/A
Shock (Survival)	1/2sin, 20g, 11ms	1/2sin, 20g, 11ms
Vibration		
Operating	1.05g rms	1.05g rms
Storage	1.7g rms	1.7g rms
(Note: 5-20 Hz: 0.05g <sup>2</sup> /Hz, 20-150 Hz: -3dB/octave)		

## Power Specifications

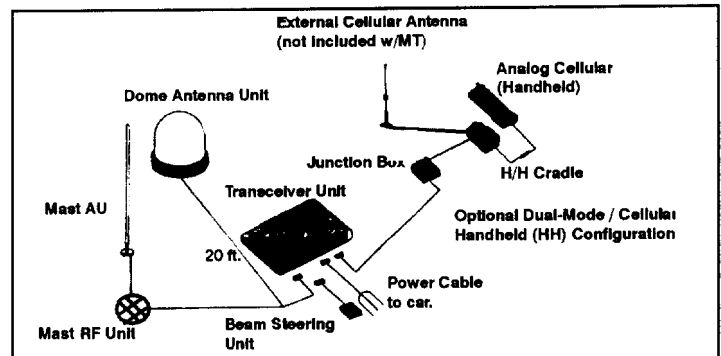
Primary Voltage	+10.5VDC to +16VDC @ 6A	
Power Consumption	Dome	Mast
Receive	<40W	<40W
Transmit	<70W	<70W

## System Components

Standard (MSAT only)  
 MSAT Land Mobile Medium Gain Antenna Unit (MG-AU: Dome, or Mast with 20 ft. (6 m) antenna cable (AU-TU)  
 MSAT Transceiver Unit (TU)  
 Handset (HS) with Cradle Unit (CU)  
 Beam Steering Unit (BSU) (Included with Dome AU only)

## Options

Fax - See MSAT Service Provider  
 Dual-Mode/Cellular Handheld (HH) with Cradle Unit (CU) with Cellular Antenna Cable (Antenna not included)  
 PTT/MIC and Speaker  
 Hands-Free Kit



This device is designed for use with the TMI Communications and Company, Limited Partnership (TMI) Mobile Satellite (MSAT) system. TMI's MSAT system is scheduled to provide voice, fax and data services. These services must be obtained separately.

The contents in this publication are subject to change without notice. 10/95



**MITSUBISHI ELECTRIC**

4299 14th Avenue  
 Markham, Ontario L3R 0J2  
 Tel: (905) 475-7728, Fax: (905) 475-7958

# MSAT Communicator™

**Westinghouse** SERIES 1000

Designed for use on the MSAT  
Network, the compact and  
modular Westinghouse SERIES  
1000 supports continent-  
wide phone, mobile phone,  
dispatch radio, facsimile, and  
data communications. It's  
your connection to seamless  
communications on land, at sea  
and in the air.



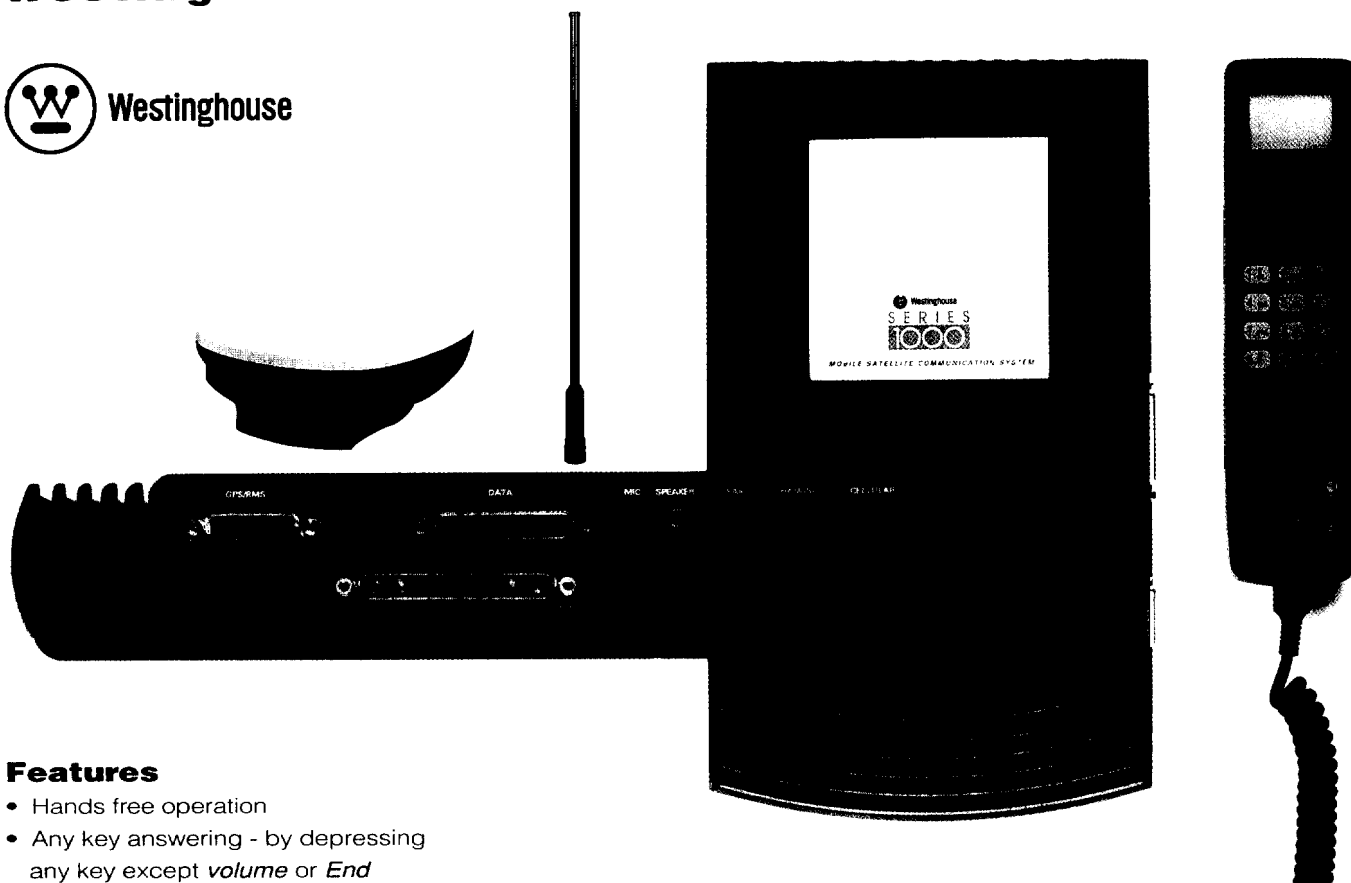
 **MSAT™**  
Go Anywhere, Stay In Touch

# MSAT Communicator

**Westinghouse** SERIES 1000



Westinghouse



## Features

- Hands free operation
- Any key answering - by depressing any key except *volume* or *End*
- Automatic answering - after third ring
- Electronic lock preventing unauthorized calls
- Call-in absence indicator for number of unanswered calls received
- 90 Alphanumeric plus 10 emergency number memory
- Programmable call restrictions protected by password
- Horn alert can be activated for incoming calls
- Alternate voice/data operation
- Built-in PC data and GPS position location interfaces
- Full duplex handset with built-in push-to-talk feature for voice dispatch capability
- Optional cellular mode and packet-switched data capability
- Unattended operation for connected fax, data and messaging equipment
- Multiple antenna configuration choices

## Technical Specifications

### Frequency Band

1626.5 - 1660.5 MHz (Transmit)  
1525 - 1559 MHz (Receive)

**Channel Spacing** 6 kHz

**Operating Current** 2A (Receive)

### Dimensions

Transceiver  
30.8 cm (L) x 18 cm (W) x 5.7 cm (H)  
Antenna Electronics Unit  
22.6 cm (L) x 18 cm (W) x 6.4 cm (H)

### Weight

Transceiver 3.4 kg  
Antenna Electronics Unit 3.4 kg

### Operating Temperature

- 30°C to +55°C (Ambient)

## MSAT Network Features

- Satellite-based with central control and switching facility providing interconnection to the public switched telephone network and public and private packet switched data networks, and cellular networks
- North America-wide coverage to 400 kilometres offshore, Hawaii, and the Caribbean
- Supports a full complement of calling features, such as call waiting and forwarding, conference calling, call blocking, and alternate voice/data operation



**TMI Communications**

TMI Communications and Company, Limited Partnership

Head Office:

1601 Telesat Court, P.O. Box 9826, Ottawa, Ontario K1G 5M2

Tel: 613-742-0000 Fax: 613-742-4100

1 800 216-MSAT

**MSAT**  
Go Anywhere. Stay In Touch

Note: The services described here are available once the MSAT Network becomes fully operational. Capabilities and specifications are subject to change. Technical specifications are supplied by Westinghouse to TMI. All trade-marks are the property of their respective owners. Service availability in areas outside

Printed in Canada  
April 1995

# Freedom To Go Anywhere and Stay In Touch.

Freedom has always been the promise of wireless communications. We've just never had a wireless system capable of delivering absolute freedom.

*Until now.*

Today, there's a network that uses the world's most advanced mobile communications satellites to link Canada, the U.S., Mexico and the Caribbean and Central America into a single communications cell.

It's the MSAT Network from TNC Communications, and it's the beginning of a whole new era in mobile communications.

## **Voice and Data Via Satellite, Across the Continent**

The MSAT Network picks up where cellular and two-way radio leave off, providing digital voice and data communication services via satellite to a coverage area that includes most of the Western Hemisphere.

Regardless of your location or destination, all you need is a MSAT service — and you're connected to the world — is a mobile phone. The possibilities are endless.

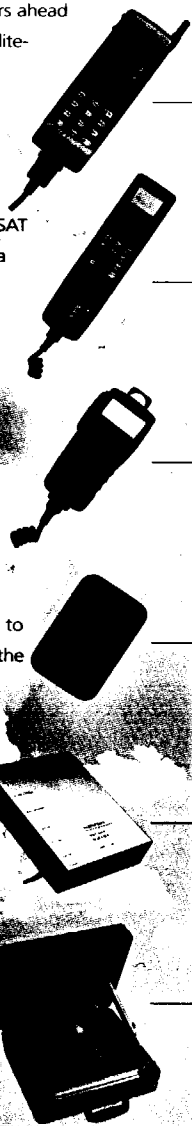


### Taking Communications To A Higher Level

Two decades and over \$500 million in the making, the MSAT Network is years ahead of other planned commercial satellite-based systems.

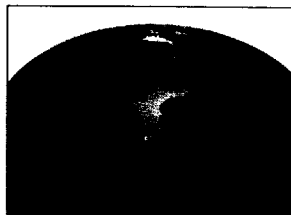
The MSAT satellite is now in orbit 36,000 kilometres above North America. Its power means users can access the network with compact satellite phones called MSAT Communicators™. These support a range of digital voice and data capabilities for both mobile and stationary users, and can be installed in any vehicle operating on land, at sea, or in the air, and at any fixed site, whether home, business, field operation, emergency site, or remote camp. Computers, fax machines, position locating devices, and remote monitoring and control equipment are all easily connected to MSAT Communicators for use on the network.

There is a dual mode cellular/satellite phone that allows users to switch back and forth between the two services, depending on their location. A portable MSAT Communicator that comes in a briefcase is also available.



### Affordable, Go Anywhere Communications

The network answers a wide range of immediate needs. Through its digital voice capabilities, MSAT delivers modern phone services to companies and communities that are currently unserved or underserved; extends mobile phone services beyond the range of current cellular systems; and makes sophisticated dispatch radio available everywhere — without the need for capital investment in towers and repeater stations. And the network's packet and circuit switch data capability takes mobile computing and remote monitoring and control to a whole new level of sophistication.



*But that's just the beginning.*

New features and services such as one- and two-way paging, voice messaging, and wireless tether are also underway, and the MSAT Network is poised to serve emerging demands, including the accelerating trends toward teleworking and distance education.

### Available Across Canada

TMI's National Full Service Providers market the full range of MSAT Services nationally and include the country's leading wireless communications companies. Regional Service Providers market select services to specific industries and geographic markets within the country.

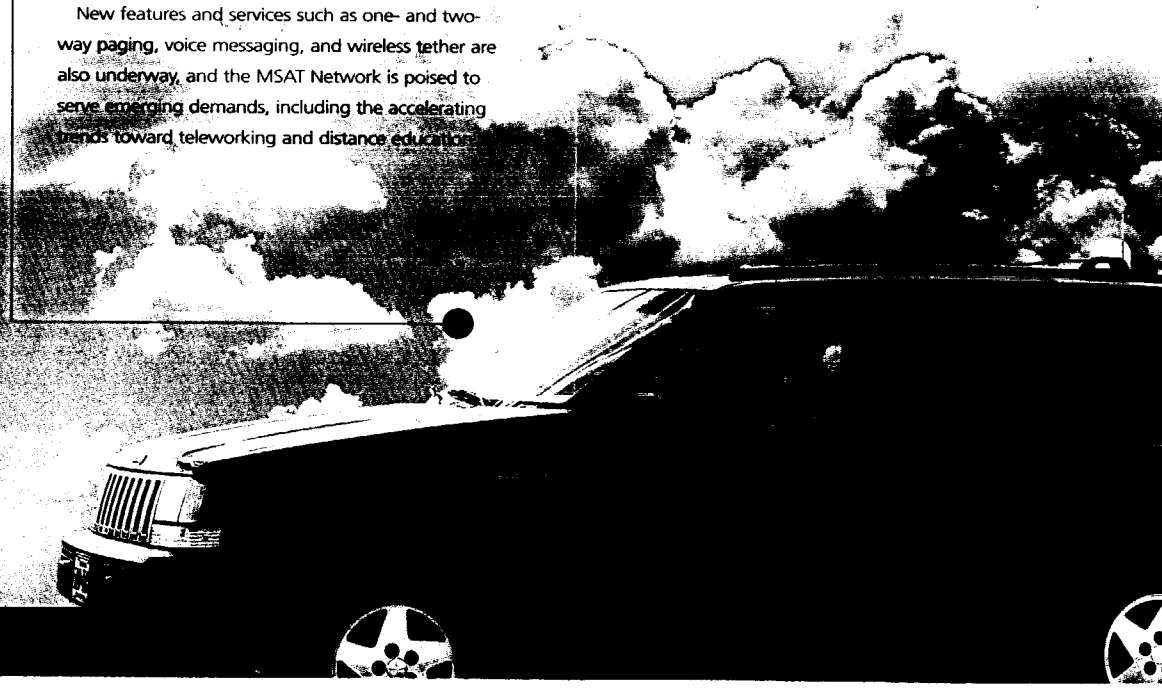
For more information on the MSAT Network and MSAT Service Providers, please contact TMI Communications.

**1 800 216-MSAT**

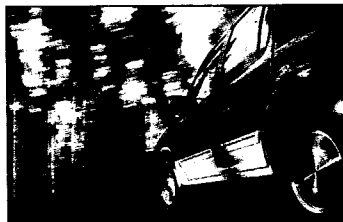
 **TMI Communications**

TMI Communications and Company, Limited Partnership  
Montreal, Ottawa, Toronto, Calgary, Vancouver

Head Office  
1601 Telesat Court, P.O. Box 9826 Ottawa, Ontario K1G 5M2  
Tel: 1 800 216-MSAT or 613-742-0000 Fax: 613-742-4100

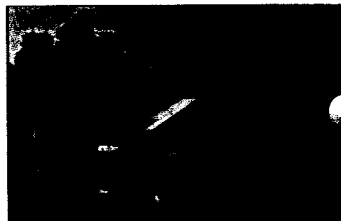


Resource industries can rely on MSAT to keep in touch with field personnel and to monitor remote equipment and assets.



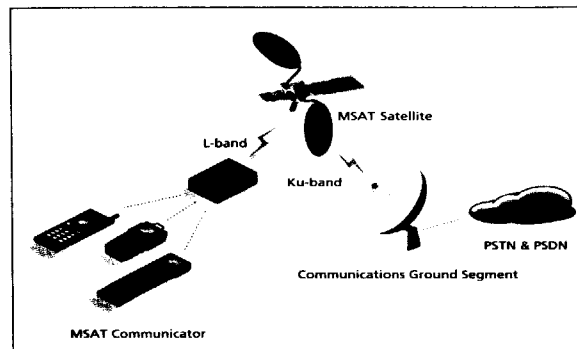
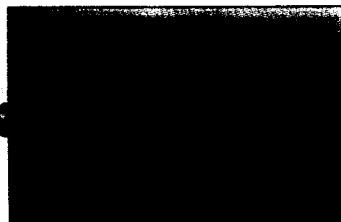
Outside the range of cellular, sales and service personnel can use the network to create their own truly mobile office.

MSAT provides a secure, reliable communication service for emergency service organizations and government agencies.



MSAT is the new link to the outside world for communities and companies.

Fleet managers can count on MSAT to communicate with mobile personnel and track vehicle movements anywhere on the continent, or offshore.



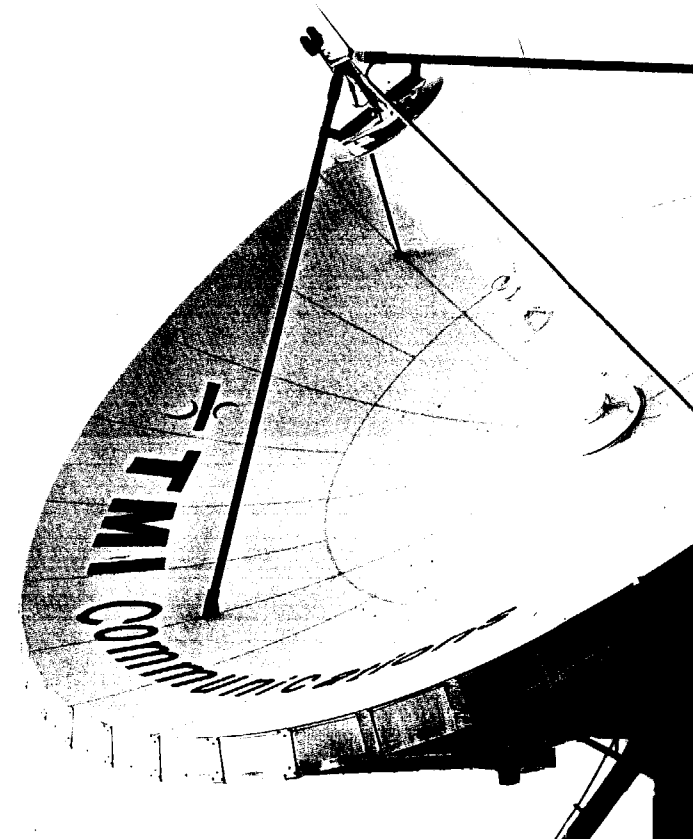
#### MSAT Network Configuration

Voice calls and data transmissions from users are relayed directly from the MSAT Communicator via L-band to the satellite, then down to TMI's Communications Ground Segment (CGS) via Ku-band. The CGS consists of an 11-metre satellite dish; the Network Operations Centre, where the network is monitored and controlled; the Network Communications Controller, which allocates communications channels on a per call basis; a Feederlink Earth Station, which provides connectivity to the public telephone network (PSTN); and a Data Hub, which provides connectivity to private and public data networks (PSDN).

#### TMI Communications

##### — The Satellite Communications Leader

Led by a management team of satellite, communications, operations, and marketing specialists, TMI Communications has taken MSAT from concept to commercial service in just under a decade. A BCE business headquartered in Ottawa with offices across the country, TMI is the only Canadian enterprise operating its own satellite-based mobile communications network — the first network that truly lets you go anywhere, while always staying in touch.



# SCADA



**MSAT****SCADA**

The MSAT network supports SCADA (Supervisory Control and Data Acquisition) applications. Using a packet switched transport mechanism, the network offers reliable and efficient means of data transmission. Since users pay for only what they send, packet data is a cost-effective alternative when data traffic is periodic and "bursty".

Together, SCADA and the MSAT network form a reliable alternative to traditional methods of data collection and monitoring to and from remote sites. SCADA applications allow companies to perform a variety of monitoring functions, including: well head monitoring and control; weather monitoring; water and tank level monitoring; power utilities monitoring and pipeline monitoring; as well as other data collection applications.

Customers can also take advantage of features that meet the trouble-shooting and alarm reporting needs that only a full duplex satellite system can provide.

The power and flexibility of the MSAT network have provided our partners with the opportunity to develop and package effective end-to-end solutions for SCADA customers.

These partnerships, combined with the aggressive pricing of MSAT data, make a distinct statement in the marketplace.

#### **Value Added Reseller/ System Integrator Opportunities**

The Narrowband Communicator requires minimal set-up time and can be easily transported from site to site. This allows the MSAT network to be deployed at temporary sites and further minimizes hardware investment for subscribers. The benefits will be most obvious to remote SCADA markets that now use capital-intensive terrestrial data transmission technologies. It also provides a demand for the deployment of the MSAT network from sites that were previously too expensive to connect. This factor alone creates a substantial increase in potential market size. Resellers also have access to highly trained TMI staff who are experts in MSAT technology.

#### **End User Features**

MSAT Packet Data network costs are based on the amount of data transmitted. Data transmission time is not a cost factor. Users will incur the same data transmission cost for real time or store and forward reporting systems. This means no expensive overhead cost such as modem synchronization charges for data transmission.

The MSAT network's wide geographic coverage allows users to employ a standard platform for SCADA applications rather than a multi-vendor environment. This feature simplifies network management and operation, provides consistent service performance for all deployed applications and affords users the ability to create a centralized support depot to save labour costs and resources.

#### **Requirements for SCADA**

SCADA on the data network requires the energy efficient Narrowband Communicator and its associated accessories such as a solar panel and battery to provide connectivity anywhere. The MSAT network can be set-up for any company whose SCADA application is presently, or has the ability to become, connected to a public packet switched network (such as Datapac). No further interconnection arrangements are required to set up a SCADA remote to host connection. Subscribers whose application hosts are remotely located may use the Narrowband Communicator for a host connection.

 **TMI Communications**

HEAD OFFICE  
1601 Telesat Court, P.O. Box 9826, Ottawa, Ontario K1G 5M2  
Tel: (613) 742-0000 Fax: (613) 742-4100  
1-800-216-MSAT

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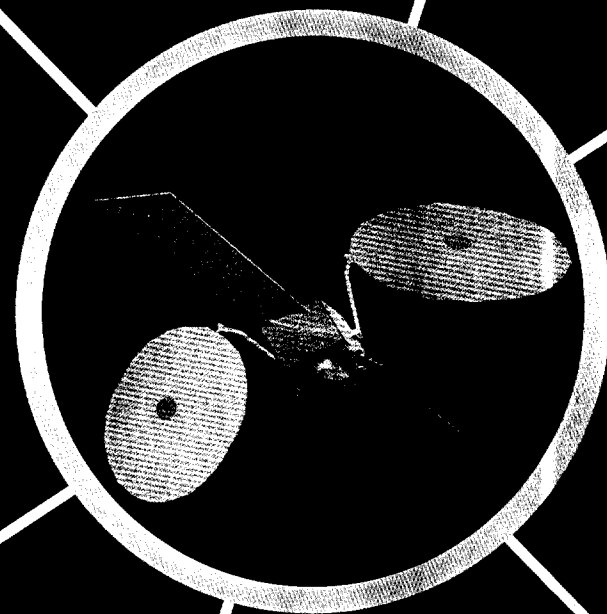
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MSAT

Narrowband PST 2000

**Cost-effective  
data transmission.  
Right out of the box.**



 **MSAT**